

City of Anacortes Public Works

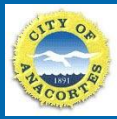
"Essential Services for our Community"



CITY OF ANACORTES

WATER TREATMENT PLANT

Climate Change Impact Mitigation

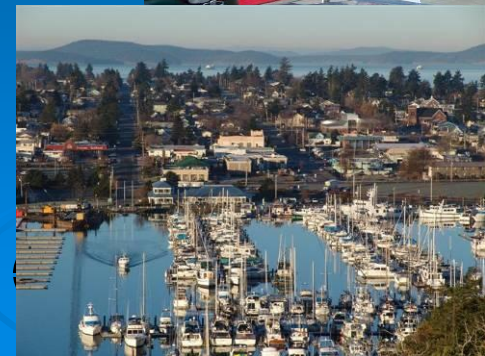


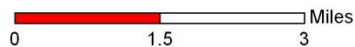
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ANACORTES WASHINGTON







Areas and Customers Served

- Largest single source of potable water in Skagit County and Island County
- Approximately 56,000 customers

Major customers :

Shell and Tesoro Refineries

City of Oak Harbor

NAS Whidbey

Town of LaConner

Shelter Bay Community

Skagit PUD

Swinomish Tribal Nation

March Point complex

Anacortes

Del Mar Water Association, The Pointe





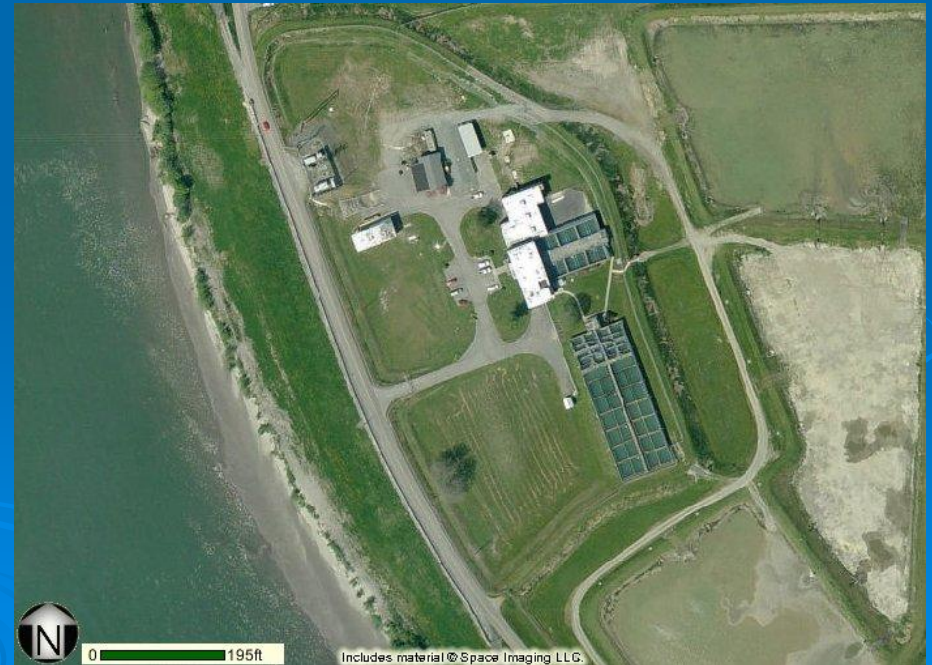
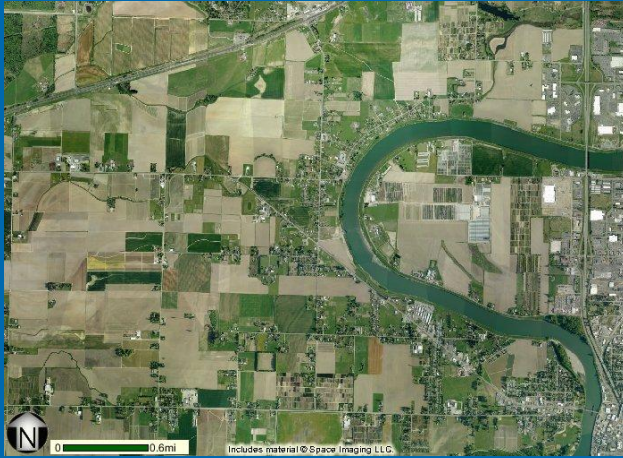
- Current annual average/daily demand
- 21.4 mgd
- Current maximum daily demand
- 29 mgd
- 2019: 26.9 mgd average/38.1 mgd maximum
- 2029: 28.7 mgd average/41.0 mgd maximum

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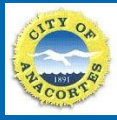
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Flooding Issues





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Operations Building – South End





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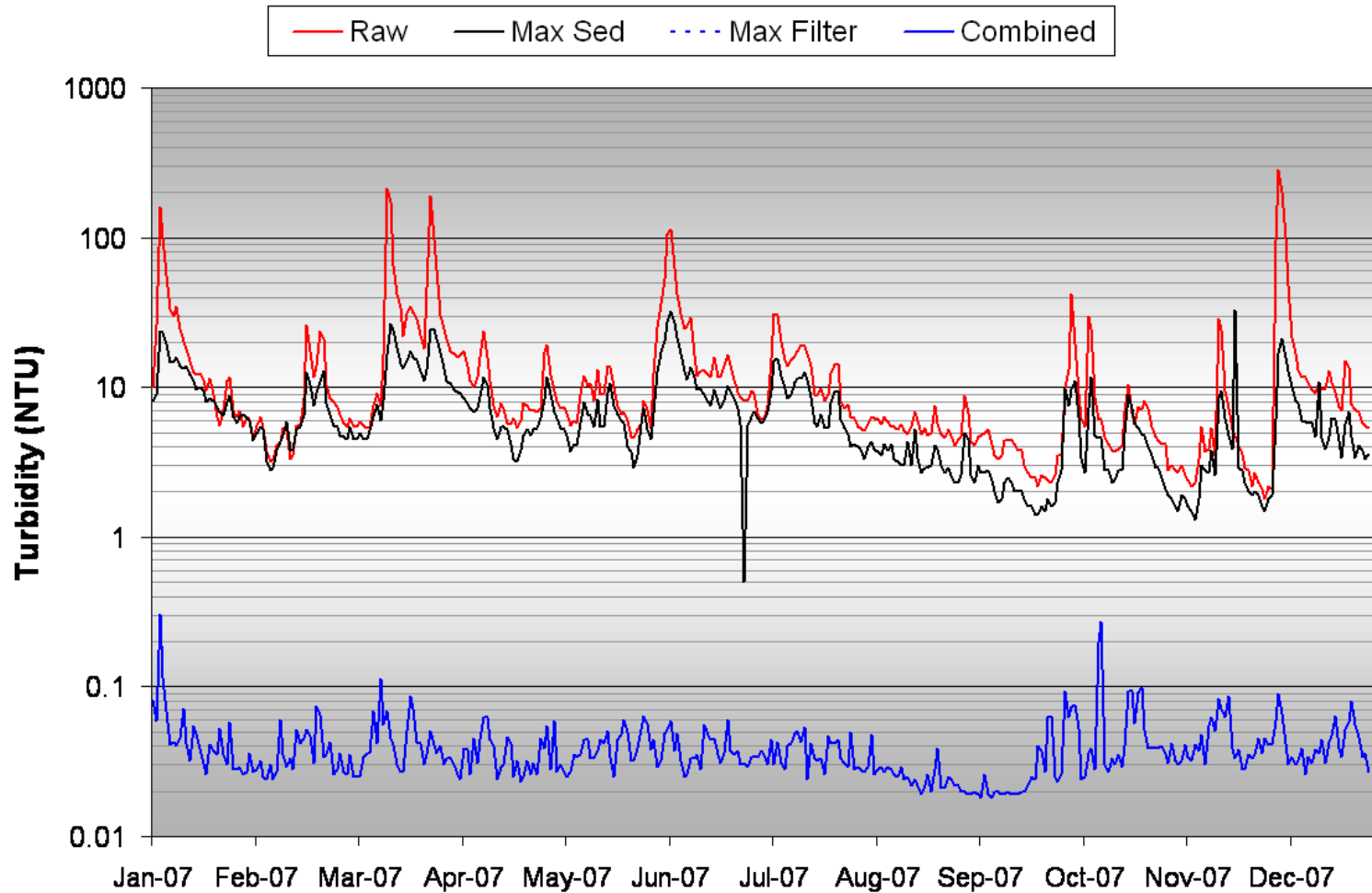


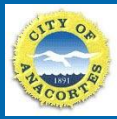
Sediment Load





Turbidity Profile





City of Anacortes Public Works

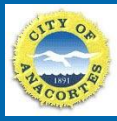
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What are we building?

- A new **treatment facility** that includes a state-of-the-art pre-treatment process for more effective clarification of water drawn from the Skagit River. The facility also includes granular media filters for final clarification, a transfer pumping station, and operations spaces for plant staff.
- A new **chemical facility** to house chemicals used for pre-treatment and filtration processes, pH and alkalinity adjustment, and disinfection.
- A **ground level steel tank** to store over two million gallons of treated water. The tank also provides necessary disinfectant contacting time prior to distribution to the water system.
- A new **high service pump station** to pump treated water into transmission pipelines for conveyance to customers.
- Extensive improvements and additions to the plant's **electrical power supply and distribution** to increase reliability of treated water production.

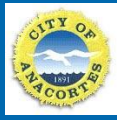


Anacortes Water Treatment Plant Upgrade

- *\$ 56 million construction contract*
- *2 ½ year project*
- *Completion in 2013*
- *IMCO general contractor*
- *HDR design engineer*
- *MWH project management*

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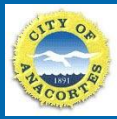


Sediment Load /Removal

- Increased sediment load expected
- Specified a ballasted sand sediment removal system
 - Krueger "ACTI FLOW" system
- Constructed a dual train redundant sediment removal process

Finish water filtration system

- Media filter instead of membrane filtration
- 8 filter bays



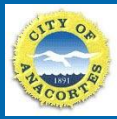
Flood protection

- Flood interval / intensity increase predicted
- Existing measures
 - Ring dikes and dewater pump system
 - Significant sand bag effort, volunteers and Navy personnel
- Elevated structures
- Water tight construction
- Water proof membrane below 40 foot elevation
- No/minimal penetrations below 100 flood elevation
- Electrical switch gear located above 100 year flood level



Waterproof membrane





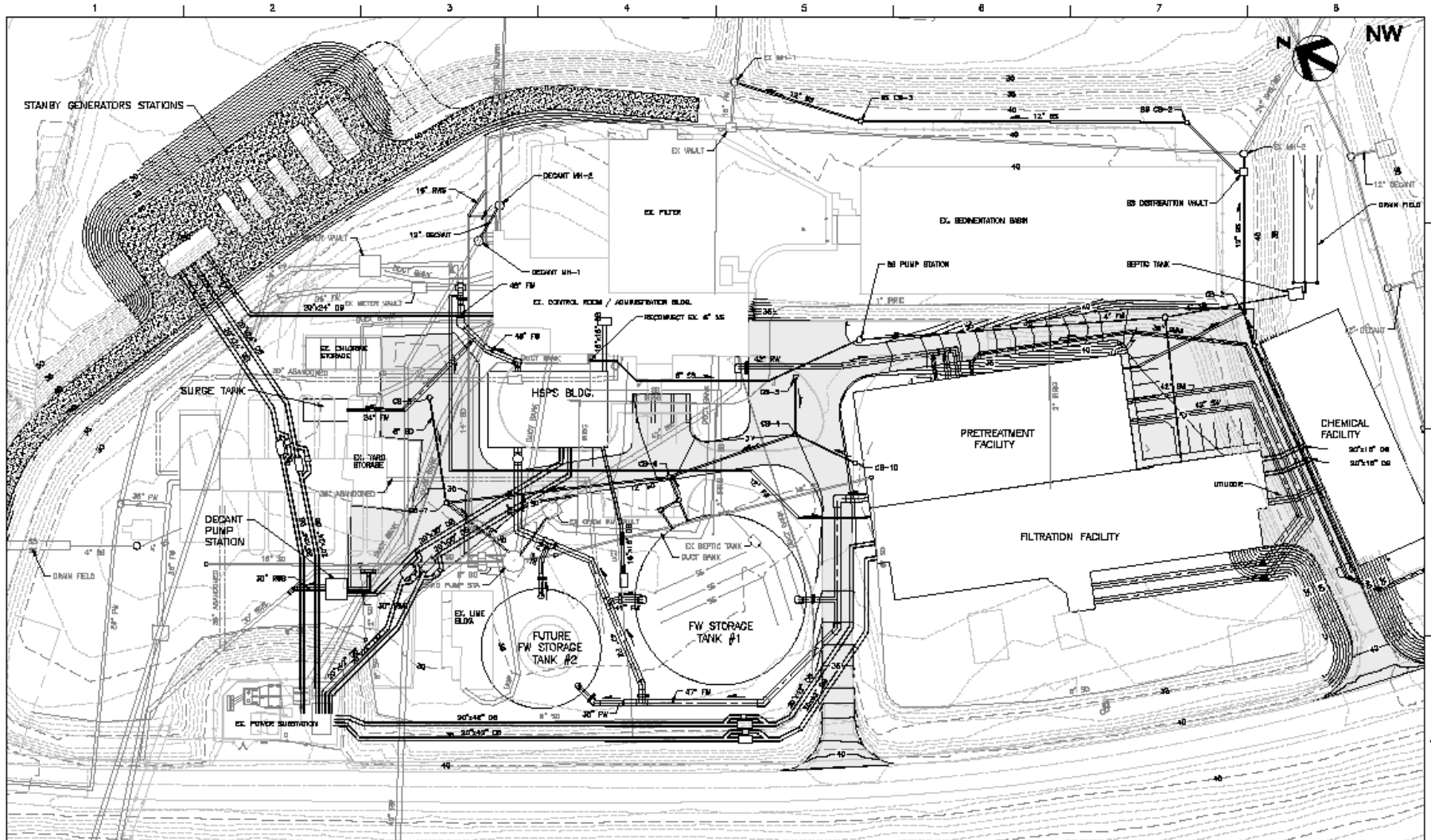
Waterproof membrane





Elevated Switch Gear



**HDR**[illegible]

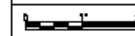
PROJECT NUMBER	Dwg. Revision
PROJECT NUMBER	000000-0001 151 13

**60%
SUBMITTAL**

WATER TREATMENT PLANT
IMPROVEMENTS PROJECT

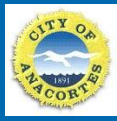
CONTACTED NUMBER

GENERAL
SITE PIPING PLAN (NW AREA)



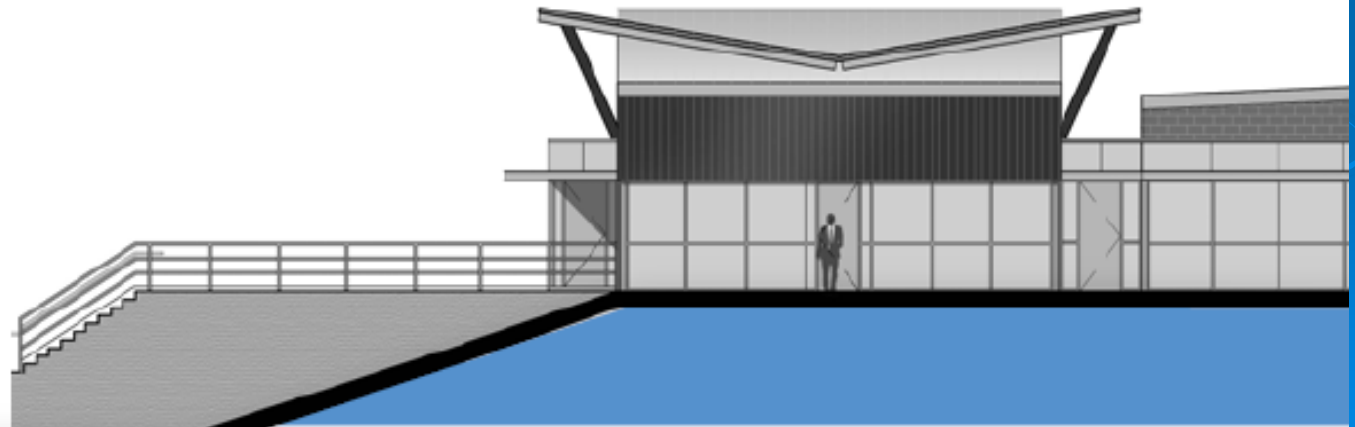
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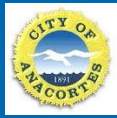
HEET



What are the benefits?

- **Improve treatment performance** to provide a higher level of treated water quality and safety.
- **Greater reliability** for the production of safe drinking water, especially in the critical period immediately after a natural disaster.
- **Increased plant production capacity** to meet future water system demands. The initial rated capacity will be 31.5 million gallons per day (gpd), expandable to 54.9 million gpd to treat the City's Skagit River water rights.

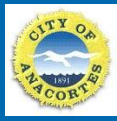




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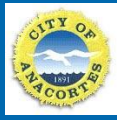




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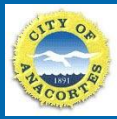




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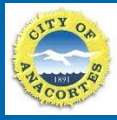




Future issues

Sediment load composition

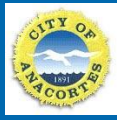
- We still need to better understand the anticipated composition of the sediment.
 - Silt Sand Clay
- We have processed raw water up to 6000 NTU
- We are required to produce finish water at a minimum of 0.2 NTU
- Our average finish water is 0.02 NTU



Future issues

Salinity

- Currently tidal influence reaches upstream to Mount Vernon
- The intake for the City of Anacortes is in close enough proximity to the salt wedge that it is at potential risk for contamination over time with the combined pressures of sea level rise and predicted lower summer flows.

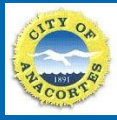


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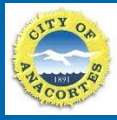
QUESTIONS ?



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